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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,254	03/23/2006	Shimon Weiss	58086-229105	9421

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VENABLE LLP  
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WASHINGTON, DC 20043-9998

EXAMINER
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LIGHTFOOT, ELENA TSOY

ART UNIT	PAPER NUMBER
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1792

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11/18/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,254	<b>Applicant(s)</b> WEISS ET AL.	
	<b>Examiner</b> Elena Tsoy Lightfoot	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-21, 27, 34 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-26 and 28-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/23/06, 5/13/09</u>  | 6) <input type="checkbox"/> Other: _____                          |

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***Election/Restrictions***

1. Applicant's election of Group II, claims 22-35, species of core of claim 33 (CdTe), and species of a capping agent (iii) (mixture of CdS and ZnS), in the reply filed on September 14, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Status of the Claims***

2. Claims 1-35 are pending in the application. Claims 1-21, 27, and 34-35 are withdrawn from consideration as directed to a non-elected invention and species.

Claims examined on the merits are 22-26, and 28-33.

***Status Identifiers***

3. Applicants are required to provide non-elected claims with status identifiers "Withdrawn".

***Claim Objections***

4. Claims 22-33 are objected to because of the following informalities: method limitations of 1-11 should be recited in the claims. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 26, 29, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The term "long chain" in claims 26 and 30 is a relative term which renders the claim indefinite. The term "long chain" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "short chain" in claim 29 is a relative term which renders the claim indefinite. The term "short chain" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 22-26, and 28-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bawendi et al (US 6,207,229).

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Bawendi et al discloses highly luminescent nanocrystals that includes a core of a variety of cadmium chalcogenides, for example, **CdX**, where X=S, Se, **Te**, which has a surface that is coated with an inorganic capping agent such as **ZnS**, ZnSe, **CdS** and *mixtures* thereof (See column 8, lines 45-51). In other words, the highly luminescent nanocrystals of Bawendi et al include claimed CdTe/CdSZnS core/shell semiconductor nanocrystal.

The nanocrystal of Bawendi et al is made according to the method comprising the steps of: providing a nanocrystal precursor that comprises a core having a surface that includes a sufficient amount of a solubility agent to render said nanocrystal precursor soluble in an organic solvent (See column 5, lines 40-45; column 6, lines 1-11), and coating the surface of said nanocrystal precursor with a sufficient amount of an inorganic capping agent to form said nanocrystal, wherein said coating of the surface of said nanocrystal precursor with said inorganic capping agent takes place in the presence of an organic solvent (See column 6, lines 11-20, 50-51). Bawendi et al teaches that the core nanocrystallite is *stabilized* in solution by the formation of a lyophilic coating of **alkyl** groups on the crystallite outer surface, the alkyl groups being provided by the *coordinating* solvent (claimed solubility agent) used during the growth period (See column 5, lines 40-45). Alkyl phosphines and alkyl phosphine oxides may be used as a high boiling coordinating solvent; however, other coordinating solvents, such as pyridines, furans, and amines may also be suitable for the nanocrystallite production (See column 6, lines 5-11). The coordinating solvent used during the capping layer growth process may be exchanged by repeated exposure to an excess of a competing coordinating group using a variety of compounds which are capable of coordinating or bonding to the outer surface of the nanocrystallite, such as by way of example, **phosphines**, **thiols**, amines and phosphates, e.g. short chained polymers

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which exhibit an affinity for the nanocrystallite on one end and which terminate in a moiety having an affinity for the suspension or dispersion medium (See column 7, lines 1-19). In other words, Bawendi et al teaches that nanocrystallite may be *stabilized* in an organic medium using a compound (claimed solubility agent) which has moiety exhibiting an affinity for the nanocrystallite on one end, such as **thiol** group and a moiety having an affinity for the suspension or dispersion medium such as **alkyl** groups on the other end. Obviously, the chain length of the alkyl thiol would depend on the dispersion medium, and would include any long chain thiol or short chain thiol depending on particular medium since Bawendi et al does not limit its teaching to particular thiols.

Although the CdTe nanocrystal core of Bawendi et al is produced by a process different than the process of claims 7-11 (i.e. it is made not by providing first water-soluble nanocrystal which is then treated with the sufficient amount of a solubility agent in the presence of a surfactant), the CdTe nanocrystal core of Bawendi et al has **the same surface** as the CdTe nanocrystal core produced by the process of claims 7-11, that includes a sufficient amount of a solubility agent to render said nanocrystal precursor soluble in an organic solvent. Thus, the CdTe nanocrystal core made by processes of claims 7-11 appears to be the same or similar to that of Bawendi et al. Therefore, **the burden shifts to applicant** to come forward with evidence establishing an unobvious difference between the claimed CdTe core and the CdTe core of Bawendi et al. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) (The claims were directed to a zeolite manufactured by mixing together various inorganic materials in solution and heating the resultant gel to form a crystalline metal silicate essentially free of alkali metal. The prior art described a process of making a zeolite which, after ion exchange to remove

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alkali metal, appeared to be “essentially free of alkali metal.” The court upheld the rejection because the applicant had not come forward with any evidence that the prior art was not “essentially free of alkali metal” and therefore a different and unobvious product.).

Moreover, all examined claims 22-26, and 28-33 are product-by-process claims. It is well settled that “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Therefore, the nanocrystal CdTe/CdS+ZnS of Bawendi et al reads on claimed nanocrystal made according to the methods set forth in claims 1-5, and 7-11.

### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 22-26, and 28-33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, and 7 of copending Application No. 11/630,584. Although the conflicting claims are not identical, they are not patentably distinct from each other because they directed to the same core/shell nanocrystal.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy Lightfoot, Ph.D.  
Primary Examiner  
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November 18, 2009

/Elena Tsoy Lightfoot/